

## **APPENDIX B – Methane and Nitrous Oxide Emissions from Stationary Combustion**

### **Data from State Inventory Tool**

#### **INPUT:**

Fuel Consumption data same as previous module (CO<sub>2</sub> Emissions from Fossil Fuel Combustion)

**Table B-1**  
*Residential Emission Factors  
 (metric tons gas/Billion BTU)*

	<u>N<sub>2</sub>O</u> Emission Factors	<u>CH<sub>4</sub></u> Emission Factors
Coal	0.00140	0.30069
Distillate Fuel	0.00060	0.01002
Kerosene	0.00060	0.01002
LPG	0.00060	0.01002
Natural Gas	0.00009	0.00475
Wood	0.00380	0.28487

**Table B-2**  
*Electric Utilities Emission Factors  
 (metric tons gas/Billion BTU)*

	<u>N<sub>2</sub>O</u> Emission Factors	<u>CH<sub>4</sub></u> Emission Factors
Coal	0.00140	0.00100
Distillate Fuel	0.00060	0.00301
Petroleum Coke	0.00060	0.00301
Residual Fuel	0.00060	0.00301
Natural Gas	0.00009	0.00095
Wood	0.00380	0.02849

**Table B-3**  
*Commercial Emission Factors  
 (metric tons gas/Billion BTU)*

	<u>N<sub>2</sub>O</u> Emission Factors	<u>CH<sub>4</sub></u> Emission Factor
Coal	0.00140	0.01002
Distillate Fuel	0.00060	0.01002
Kerosene	0.00060	0.01002
LPG	0.00060	0.01002
Motor Gasoline	0.00060	0.01002
Residual Fuel	0.00060	0.01002
Natural Gas	0.00009	0.00475
Wood	0.00380	0.28487

**Table B-4**  
*Industrial Emission Factors  
 (metric tons gas/Billion BTU)*

	<u>N<sub>2</sub>O</u> Emission Factors	<u>CH<sub>4</sub></u> Emission Factors
Coking Coal	0.00140	0.01002
Independent Power Coal	0.00140	0.01002
Other Coal	0.00140	0.01002
Asphalt and Road Oil	0.00060	0.00200
Aviation Gasoline Blending Components	0.00060	0.00200
Crude Oil	0.00060	0.00200
Distillate Fuel	0.00060	0.00200
Feedstocks, Naphtha less than 401 F	0.00060	0.00200
Feedstocks, Other Oils greater than 401 F	0.00060	0.00200
Kerosene	0.00060	0.00200
LPG	0.00060	0.00200
Lubricants	0.00060	0.00200
Motor Gasoline	0.00060	0.00200
Motor Gasoline Blending Components	0.00060	0.00200
Misc. Petro Products	0.00060	0.00200
Pentanes Plus	0.00060	0.00200
Petroleum Coke	0.00060	0.00200
Residual Fuel	0.00060	0.00200
Still Gas	0.00060	0.00200
Special Naphthas	0.00060	0.00200
Unfinished Oils	0.00060	0.00200
Waxes	0.00060	0.00200
Natural Gas	0.00009	0.00475
Wood	0.00380	0.02849

**Table B-5**  
*Global Warming Potentials*

Nitrous oxide	310
Methane	21

**OUTPUT:**

**Table B-6 Methane Emissions from Stationary Combustion (MMTCO<sub>2</sub>E)**

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Residential	0.1083	0.1155	0.1195	0.0750	0.0736	0.0803	0.0822	0.0587	0.0516	0.0567	0.0588
Coal	0.0001	0.0003	0.0001	0.0010	0.0012	0.0027	0.0020	0.0028	0.0022	0.0030	0.0031
Petroleum	0.0089	0.0103	0.0096	0.0106	0.0101	0.0091	0.0105	0.0093	0.0079	0.0090	0.0087
Natural Gas	0.0114	0.0125	0.0124	0.0131	0.0129	0.0137	0.0149	0.0137	0.0117	0.0129	0.0136
Wood	0.0878	0.0925	0.0973	0.0504	0.0494	0.0548	0.0547	0.0329	0.0298	0.0319	0.0334
Commercial	0.0160	0.0170	0.0170	0.0151	0.0151	0.0157	0.0171	0.0162	0.0154	0.0159	0.0160
Coal	0.0000	0.0000	0.0000	0.0002	0.0002	0.0006	0.0005	0.0008	0.0006	0.0007	0.0008
Petroleum	0.0035	0.0036	0.0031	0.0030	0.0027	0.0023	0.0025	0.0028	0.0029	0.0029	0.0029
Natural Gas	0.0067	0.0072	0.0072	0.0078	0.0079	0.0086	0.0095	0.0089	0.0082	0.0082	0.0082
Wood	0.0058	0.0062	0.0066	0.0042	0.0042	0.0042	0.0046	0.0038	0.0037	0.0040	0.0041
Industrial	0.0729	0.0672	0.0678	0.0695	0.0737	0.0757	0.0828	0.0841	0.0780	0.0807	0.0834
Coal	0.0101	0.0096	0.0095	0.0093	0.0105	0.0104	0.0088	0.0089	0.0087	0.0085	0.0086
Petroleum	0.0015	0.0016	0.0016	0.0018	0.0020	0.0017	0.0021	0.0021	0.0018	0.0022	0.0027
Natural Gas	0.0117	0.0124	0.0127	0.0130	0.0130	0.0141	0.0145	0.0150	0.0137	0.0141	0.0153
Wood	0.0495	0.0435	0.0440	0.0453	0.0482	0.0495	0.0575	0.0580	0.0538	0.0559	0.0568
Electric Utilities	0.0075	0.0078	0.0076	0.0078	0.0082	0.0086	0.0090	0.0099	0.0096	0.0096	0.0100
Coal	0.0074	0.0076	0.0075	0.0076	0.0079	0.0083	0.0086	0.0093	0.0090	0.0090	0.0096
Petroleum	0.0000	0.0001	0.0000	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002
Natural Gas	0.0000	0.0001	0.0001	0.0001	0.0001	0.0002	0.0001	0.0003	0.0003	0.0003	0.0002
Wood	0.0000	0.0000	0.0000	0.0000	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
TOTAL	0.2046	0.2075	0.2118	0.1674	0.1706	0.1803	0.1910	0.1689	0.1546	0.1629	0.1682
Coal	0.0176	0.0175	0.0171	0.0180	0.0199	0.0219	0.0199	0.0218	0.0205	0.0212	0.0221
Petroleum	0.0139	0.0156	0.0144	0.0155	0.0149	0.0132	0.0152	0.0143	0.0128	0.0144	0.0145
Natural Gas	0.0299	0.0321	0.0323	0.0340	0.0340	0.0366	0.0391	0.0380	0.0339	0.0355	0.0373
Wood	0.1432	0.1422	0.1480	0.0999	0.1019	0.1086	0.1169	0.0948	0.0874	0.0918	0.0943

**Table B-7 Nitrous Oxide Emissions from Stationary Combustion (MMTCO<sub>2</sub>E)**

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Residential	0.0286	0.0310	0.0314	0.0232	0.0226	0.0231	0.0246	0.0189	0.0165	0.0183	0.0185
Coal	0.0000	0.0000	0.0000	0.0001	0.0001	0.0002	0.0001	0.0002	0.0002	0.0002	0.0002
Petroleum	0.0079	0.0091	0.0085	0.0094	0.0090	0.0081	0.0093	0.0082	0.0070	0.0080	0.0077
Natural Gas	0.0034	0.0037	0.0037	0.0039	0.0038	0.0040	0.0044	0.0040	0.0035	0.0038	0.0040
Wood	0.0173	0.0182	0.0192	0.0099	0.0097	0.0108	0.0108	0.0065	0.0059	0.0063	0.0066
Commercial	0.0062	0.0066	0.0062	0.0061	0.0060	0.0066	0.0069	0.0074	0.0069	0.0073	0.0075
Coal	0.0000	0.0001	0.0000	0.0003	0.0005	0.0012	0.0010	0.0016	0.0012	0.0015	0.0017
Petroleum	0.0031	0.0032	0.0028	0.0026	0.0024	0.0020	0.0022	0.0024	0.0025	0.0026	0.0026
Natural Gas	0.0020	0.0021	0.0021	0.0023	0.0023	0.0025	0.0028	0.0026	0.0024	0.0024	0.0024
Wood	0.0011	0.0012	0.0013	0.0008	0.0008	0.0008	0.0009	0.0007	0.0007	0.0008	0.0008
Industrial	0.1285	0.1165	0.1173	0.1204	0.1292	0.1306	0.1447	0.1464	0.1360	0.1416	0.1459
Coal	0.0209	0.0199	0.0197	0.0192	0.0218	0.0215	0.0181	0.0185	0.0181	0.0176	0.0177
Petroleum	0.0067	0.0073	0.0073	0.0082	0.0087	0.0075	0.0092	0.0093	0.0080	0.0098	0.0119
Natural Gas	0.0035	0.0037	0.0037	0.0038	0.0038	0.0042	0.0043	0.0044	0.0040	0.0042	0.0045
Wood	0.0975	0.0856	0.0866	0.0892	0.0949	0.0974	0.1132	0.1142	0.1059	0.1100	0.1118
Electric Utilities	0.1544	0.1596	0.1563	0.1603	0.1677	0.1749	0.1828	0.1976	0.1916	0.1911	0.2015
Coal	0.1521	0.1575	0.1543	0.1573	0.1639	0.1707	0.1784	0.1922	0.1853	0.1860	0.1975
Petroleum	0.0001	0.0002	0.0001	0.0003	0.0004	0.0004	0.0003	0.0005	0.0005	0.0006	0.0005
Natural Gas	0.0001	0.0001	0.0001	0.0001	0.0001	0.0003	0.0002	0.0005	0.0005	0.0004	0.0004
Wood	0.0021	0.0019	0.0018	0.0027	0.0032	0.0035	0.0039	0.0045	0.0053	0.0041	0.0031
TOTAL	0.3177	0.3138	0.3112	0.3100	0.3255	0.3352	0.3591	0.3704	0.3510	0.3583	0.3735
Coal	0.1730	0.1774	0.1740	0.1768	0.1862	0.1937	0.1976	0.2125	0.2048	0.2053	0.2172
Petroleum	0.0178	0.0198	0.0187	0.0204	0.0204	0.0180	0.0211	0.0205	0.0181	0.0210	0.0227
Natural Gas	0.0089	0.0095	0.0096	0.0101	0.0101	0.0110	0.0117	0.0116	0.0104	0.0108	0.0113
Wood	0.1180	0.1070	0.1089	0.1026	0.1087	0.1125	0.1287	0.1259	0.1177	0.1212	0.1223

**Table B-8 Methane and Nitrous Oxide Emissions from Stationary Combustion (MMTCO<sub>2</sub>E)**

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Residential	0.1368	0.1465	0.1508	0.0983	0.0962	0.1034	0.1068	0.0776	0.0681	0.0750	0.0773
N <sub>2</sub> O	0.0286	0.0310	0.0314	0.0232	0.0226	0.0231	0.0246	0.0189	0.0165	0.0183	0.0185
CH <sub>4</sub>	0.1083	0.1155	0.1195	0.0750	0.0736	0.0803	0.0822	0.0587	0.0516	0.0567	0.0588
Commercial	0.0222	0.0237	0.0232	0.0212	0.0211	0.0222	0.0240	0.0236	0.0223	0.0232	0.0235
N <sub>2</sub> O	0.0062	0.0066	0.0062	0.0061	0.0060	0.0066	0.0069	0.0074	0.0069	0.0073	0.0075
CH <sub>4</sub>	0.0160	0.0170	0.0170	0.0151	0.0151	0.0157	0.0171	0.0162	0.0154	0.0159	0.0160
Industrial	0.2013	0.1836	0.1851	0.1899	0.2029	0.2063	0.2276	0.2305	0.2140	0.2223	0.2293
N <sub>2</sub> O	0.1285	0.1165	0.1173	0.1204	0.1292	0.1306	0.1447	0.1464	0.1360	0.1416	0.1459
CH <sub>4</sub>	0.0729	0.0672	0.0678	0.0695	0.0737	0.0757	0.0828	0.0841	0.0780	0.0807	0.0834
Electric Utilities	0.1619	0.1674	0.1639	0.1681	0.1759	0.1835	0.1918	0.2075	0.2012	0.2006	0.2116
N <sub>2</sub> O	0.1544	0.1596	0.1563	0.1603	0.1677	0.1749	0.1828	0.1976	0.1916	0.1911	0.2015
CH <sub>4</sub>	0.0075	0.0078	0.0076	0.0078	0.0082	0.0086	0.0090	0.0099	0.0096	0.0096	0.0100
<b>TOTAL</b>	<b>0.5223</b>	<b>0.5212</b>	<b>0.5230</b>	<b>0.4774</b>	<b>0.4961</b>	<b>0.5155</b>	<b>0.5502</b>	<b>0.5393</b>	<b>0.5056</b>	<b>0.5212</b>	<b>0.5416</b>



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